
Artificial Intelligence And Its Implication For Customer Services

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ABSTRACT

Artificial Intelligence is the most futuristic invention not only shown in movies but also being used in real life by many organisations. In a competitive world it has become really very important to understand the customer preferences and their needs. For the purpose of attaining the most of customer satisfaction many e-commerce companies have implemented artificial intelligence in their business operations. This study discusses about the implication of artificial intelligence by E-commerce companies for customer services. It further explains about the artificial intelligence tools used for customer services, their benefits and problems faced by customers while using it. The study conducted is descriptive and a combination of quantitative and qualitative in nature. For the purpose of collection of customer reviews of around 100 people questionnaire was used as research data collection tool. For the purpose of analysis AHP model, SPSS software and tag clouds were used. From the analysis it can be said that customers see a bright future and scope for artificial intelligence in future but for present due to many short comings they prefer human service over artificial intelligence. The Study also suggests few suggestions for the problems faced by customers during online shopping using artificial intelligence. There is a wide scope for further research on similar topics.

KEYWORDS

Artificial Intelligence, Customer Satisfaction, Implication, Online Shopping Platform, E-Commerce, Digital, Customer Services.

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INTRODUCTION

Digital era is helping organisations to flourish their business and increase their customer base. Major Challenge for any business is to satisfy their customer needs as every customer is different from one another. One of the best ways to delight customers is by resolving their problems and questions as quickly and smoothly as possible. Various emerging technologies are being used for simplification and effectiveness. Artificial Intelligence is one of those emerging technologies. It has revolutionized digitalization by businesses. Consumer behaviour and preferences can very well be predicted and served by using AI. In order to meet growing demand and to keep up with their competitors, companies need to be careful

regarding implementation of AI technology to improve their own services.

Platforms like OTT, Online shopping, online banking, government portals, and many others have implemented Artificial Intelligence for better customer services. This has helped them capture market and retain their customers. The fast evolution of e-commerce and technologies will keep enhancing the customer demands.

Implementation of Artificial Intelligence by E-commerce can be seen as a new trend and a necessity. The future upholds Opportunities for e-commerce sector to evolve with ever changing technologies.

OBJECTIVES OF THE STUDY

- To study the pros and cons of Artificial Intelligence
- To analyse the relevance of AI for customer service
- To understand problems and challenges faced by customer while using of AI during online shopping

SCOPE OF THE STUDY

- This study determines the level of implication of AI and innovative ways for satisfying customers.
- This study will provide a fair idea about improvement areas to organisations and researchers.

SIGNIFICANCE OF THE STUDY

- This study will provide innovative ideas to organisations for customer services
- This study will give an overview about Artificial intelligence and its implementation
- It will create more technical jobs in the society

ARTIFICIAL INTELLIGENCE FOR CUSTOMER SERVICES

Artificial intelligence like a clone of biological intelligence which has got an ability to analyse the environment through machine learning models and take a decision based on it. It used for reducing the manual human interventions for various functions.

In today's world AI is being used at various horizons of a business. For any business the most focused area is its customers. Implication of AI in the right way can help organizations enhance their customer services. Examination of customer journey and satisfaction has become an important need for an organisation.

During the times of pandemic interaction with customers increases which can lead to trigger and have an effect on trust and loyalty. Focus on customer preferences and their shopping journey can benefit the organizations in many ways.

Pandemic times have brought a growth in E-commerce sector, increasing their customers. To retain the existing customers and provide exclusive services to their customer base e-commerce companies are implementing Artificial Intelligence. E-commerce Companies like Amazon, Myntra, Flipkart and many others have already implemented AI for their better customer services.

Artificial Tools for Customer Services:

- *Digital Personalization:* - It is a tool used for providing personalised service regarding the product choice, size, colour preference and other specifications via digital mode. Customers appreciate when the retailer remembers their choice and offers products accordingly. But it becomes humanly difficult to keep track of every customer's personal choices. Thus, AI uses the data available about the customer and serves with personalization to them.
- *Virtual Assistance:* - Virtual assistance is the most used tool by organisations. They are also known as Chat bots and digital assistance. Here, the AI works as an assistance to solve, record and suggest to the queries by customers.
- *Smart Searches:* - By remembering the past Searches of the customers AI automatically suggests the same or similar products to its customers. This tool is improving itself by not only providing with text searches, but also by voice search and image searches.
- *Smart Content Creation:* - Artificial Intelligence is such an advance technology with creates content on its own by identifying the trends and most demanded products and services. This tool helps in grabbing the customer attention.
- *Recommender Systems:* - As per the past history of purchases and searches by customers this AI tool recommends products and services to customers. For the purpose of this tool the AI uses data from different social media accounts and search engine accounts of the customer.
- *Contextual Analysis:* - This tool is used for just-in-time sales, where the AI itself predicts and takes decision for the product to be ordered before or at the time the product gets out of stock. For this purpose

it not only uses the purchase history of customer but also the time, date, weather, location and other factors that affects the customer's decision to buy.

- *Facial Recognition*: - This tool helps companies recognize their existing customers by identifying their faces. After identifying AI automatically recommends the products and services based on their past purchases. Facial Recognitions can also be used while customer virtual assistance by identifying the expressions of the customer.
- *Emotion AI*: - This tool helps machines to recognize, respond and interpret to the human emotions. These emotions can be identified through body language, facial expressions, voice and text.

Benefits to E-commerce Platforms in Implementation of Artificial Intelligence for Customer Services:

- *Scalability*: - AI powered tools can help enhance service quality by handling large number of customers at a time and also perform repetitive tasks within no time. With the help of AI it will become easy for customer service agents to have a better focus on complex and higher value work.
- *Targeting Potential Buyers*: - By recording the buying habits of the customers, AI analysis and shortlists the most frequents buyers and their choices. With this it becomes easy for the e-commerce platforms to identify and target the potential buyers.
- *Stronger Customer Engagement*: - AI leverages information collected from Customer Relationship Management. It becomes easy for the agents to engage customers as AI immediately provides with all the required information.
- *Cost Saving*: - Cost of staff for customer services, recording of data, and other things increases the costs of the company. Whereas, implementation of AI is a 1 time investment which can perform a work of many people alone and more efficiently.
- *Better Business Decisions*: - AI helps businesses to identify the potential customers, prediction for demands for products, stock availability and many other services. With the help of various tools of AI Online platforms can take

better and accurate decisions which will not only save their costs but also help them retain their customers.

- *Better Customer Services*: - As AI can analyse the purchases of customers and remember their choices, provide suggestions and customer services, etc. it results in providing better customer services by understanding customers and providing them with a new shopping experience.

Challenges Faced by E-commerce Platforms in Implementation of Artificial Intelligence for Customer Services:

- *Privacy of Data*: - Data is the heart of Artificial Intelligence. It purely works on the personal data of customers collected. It has been seen that customers are not much happy with sharing their personal details as various online shopping platforms. Due to need for privacy of data it becomes difficult for AI to collect relevant data and provide with accurate results.
- *Responsibility*: - Artificial Intelligence is a clone brain of human brain. It is trained to take decisions on its own. But at the end it is a machine. For any of the mistakes made by AI the main question that arises is who will be responsible for it.
- *Improperly Defined Ethics*: - There are no proper defined ethics and policies regarding Implementation of AI. It becomes difficult of organisations to follow a homogeneous policy.

Benefits of Artificial Intelligence to Customers Using Online Platforms for Shopping:

- *Saves Time*: - AI remembers all the details about customers like their shopping choices, payment details, delivery details, and many other details. This feature of AI saves time of customers by simplifying things and eliminating the need to enter details again and again.
- *Easy to find relatable products*: - AI synchronizes with all the searches made by customers on various search engine platforms. From the searches it records the choices made by customers and automatically shows relatable products to customers at the time of online shopping. It becomes easy for customers to find

reliable products on these online shopping platforms.

- *Immediate Assistance*:- Since AI is a machine it can work continuously without getting tired. AI also has all the information about the customer. Thus, it immediately provides customers with assistance and helps in solving their queries 24*7. AI based Chatbot is one of the example of immediate assistance.
- *Faster Shopping*:- AI automatically suggests and provide input of delivery address and payment details. As per the shopping pattern followed by customers AI automatically predicts the stock-out of product with customers and places an order before the customer runs out of it. Customers can complete their shopping within no time without remembering their personal details again and again.
- *Personalization*:- AI remembers the personal details selected by the customers at the time of online shopping. When customer shops for the next time AI automatically suggests products based on the filters selected like size, colour, and other specification. This feature of AI gives customer a feeling of personalisation and enhances their shopping experience.

Problems Faced by Customers by using Artificial Intelligence based Customer Services:

- *Non- reliable search results*:- AI is known for remembering customer details and their choices. But from the survey conducted that majority of the customers were not satisfied with search results shown by AI based platforms. Due to insufficient data or improper training of AI many times it's seen that it suggests irrelevant suggestions to customers.
- *Improper Replies to Queries*:- It has been seen that AI is trained on limited data. This insufficient data and training leads to improper and unsatisfactory replies to the queries of customers. AI fails when it has to solve complex queries of customers.
- *Difficult to use*:- Since the literacy rate in India is not high and AI is a very new technical concept for the people, it becomes difficult for the customers to understand AI, its working and its usage. Although using AI based platforms doesn't need a person to be tech savvy, but

still customers need to be comfortable in using various features at the time of online shopping.

- *Insufficient Knowledge*:- As many times AI failed to give right suggestions to customers, it was observed that it lacks sufficient knowledge and training to understand the customer needs and choices. This problem can be solved by organisations by providing sufficient and data as per the needs of the customers.
- *Usage of private data*:- From the survey conducted that majority of the customers were not happy with their personal data getting misused and leaked. Customers provide with the personal data only to enjoy a better and hustle free services from the online platforms. But if companies fail to secure the customers' private data it may disappoint and discourage customers from sharing their details. This may affect the future implication of AI on these online platforms.

REVIEW OF LITERATURES

- Artificial Intelligence Tools for Enhancing Customer Experience. (2019)

Joshi Sujata, Das Aniket, Matta Mahasingh; published in "International Journal of Recent Technology and Engineering (IJRTE)", [8].

This study stays about various tools of Artificial intelligence that can be used for client retention. Positive experience leads to satisfaction and trust among customers. This would lead to brand loyalty and mouth to mouth promotion. This study is a conceptual based study, due to which it misses the view point of customers. Therefore, the researchers will be collecting data from a sample size and further analyse it.

- Integration of Artificial Intelligence Technology Towards E-Services Among Online Clothing Websites. (2019)

Sharon Sophia. J, J. Clement Sudhahar; published in "International Journal of Innovative Technology and Exploring Engineering (IJITEE)", [9].

The study discusses the influence of artificial intelligence on customer satisfaction and customer retention. Data collected shows that the young crowd prefers to buy only. They also, studied how different artificial intelligence tools have affected

online shopping of customers. Here, they have focused only on clothing websites, whereas, there is a scope to study the implementation of artificial intelligence by E-commerce and other platforms. Thus, the researchers will keep this as a base study and analyse the factors and impacts of artificial intelligence on e-commerce sector.

- Impact of Artificial Intelligence in customer satisfaction for Banking Industries. (2020)

Teena Hassija, Dr. Priyanka Srivastava; published in, "International Journal of Advanced Science and Technology", [29].

The research article talks about various the artificial intelligence tools used by banking industries for customer satisfaction. It states that there should be a balance between virtual interaction and human interaction with customers. It also discusses about few of the important implementation of AI in the banking sector in India.

As this study focuses only on banking industries, the researchers would further conduct a study for e-commerce sector by analysing various artificial intelligence tools and their implications on customer services.

- Artificial Intelligence – Consumers and Industry Impact. (2017)

Meenakshi Nadimpalli; published in "International Journal of Economics & Management Sciences", 06(03).

The study gives an overview over implication of Artificial Intelligence by different industries. It is a conceptual based study which discusses about the importance and future of AI in these industries. This study can be taken further by focusing on implication of AI by a certain industry and by researching about benefits and challenges towards Implication of AI. Thus, researchers would conduct a descriptive research focusing on the e-commerce industry. And, will also discuss about various tools and their benefits and problems by customers.

- E-commerce: Trends to watch out for in 2021. (2021)

Karuna Sharma; published in "Businessinsiders.in".

This article discusses about the upcoming trends that can be observed in E-commerce sector in India. In this article top e-commerce giants have been interviewed regarding their views towards e-commerce in 2021. They have talked about technology, power in hands of customers, personalisation, Omni-channel presence, product range and many other things. From this article the researchers would like to select the technical trends for the future and further have an in-depth study on it.

RESEARCH METHODOLOGY

The study conducted by researchers is descriptive and qualitative are the types of research. It is done for the e-commerce websites and the respondents are the customers. A systematic questionnaire was prepared and used as a Research tool to collect the relevant data. 5-point Likert scale was used for the analysis of the data collected. Random Sampling Method, the most frequently used tool was used to select the samples. The target sample size was of around 100 people. AHP model and SPSS software is used as the statistical software.

HYPOTHESIS

- H₀₁-There is no significant need for human assistance
H₁₁- There is a significant need for human assistance
- H₀₂- AI based services has no significant impact on online shopping experience of customers
H₁₂- AI Based services has a significant impact on online shopping experience of customers
- H₀₃- AI cannot provide the better or at least same level of service than a human can to customers
H₁₃- AI can provide the better or at least same level of service than a human can to customers
- H₀₄- AI does not enhance customer shopping experience
H₁₄- AI enhances customer shopping experience
- H₀₅- Customers are not comfortable sharing their personal information on online shopping platforms
H₁₅- Customers are comfortable sharing

- their personal information on online shopping platforms
- H₀₆- AI hasn't got the potential to improve customer services in future
- H₁₆- AI has got the potential to improve customer services in future

AHP Model:

The below given figure has the list of services that customers have experienced provided by an artificial intelligence based online shopping portal. By using Analytical Hierarchy Process (AHP) Model we have analysed the sequence of services as per the priorities of the customers. As observed in the figure the service of recommending the products to customer by artificial intelligence at the time of online shopping is most preferred and enjoyed by customers as compared to 24*7 assistance provided by it. With the help of AHP model even a decision matrix is prepared which can help e-commerce platforms take decisions on to the services using artificial intelligence to be provided to the customers.

ANALYSIS AND FINDINGS

A systematic questionnaire was prepared and data of 100 respondents was collected using Google forms. For the purpose of analysis AHP model, Graphical analysis, Tag Cloud & SPSS software is used. Following is the summary and analysis of the data collected from the samples for the purpose of research.

Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Cat		Priority	Rank	(+)	(-)
1	Recommendation of product	55.2%	1	22.2%	22.2%
2	Remembers choices	10.9%	3	3.5%	3.5%
3	24*7 assistance	8.7%	5	2.9%	2.9%
4	Automatic Payment and delivery details	16.0%	2	4.5%	4.5%
5	Remembers Personal details for products	9.2%	4	1.3%	1.3%

Number of comparisons = 10
Consistency Ratio CR = 4.2%

Decision Matrix

The resulting weights are based on the principal eigenvector of the decision matrix:

	1	2	3	4	5
1	1	5.00	4.00	6.00	5.00
2	0.20	1	2.00	0.50	1.00
3	0.25	0.50	1	0.50	1.00
4	0.17	2.00	2.00	1	2.00
5	0.20	1.00	1.00	0.50	1

Principal eigen value = 5.188
Eigenvector solution: 4 iterations, delta = 9.4E-8

Fig.1

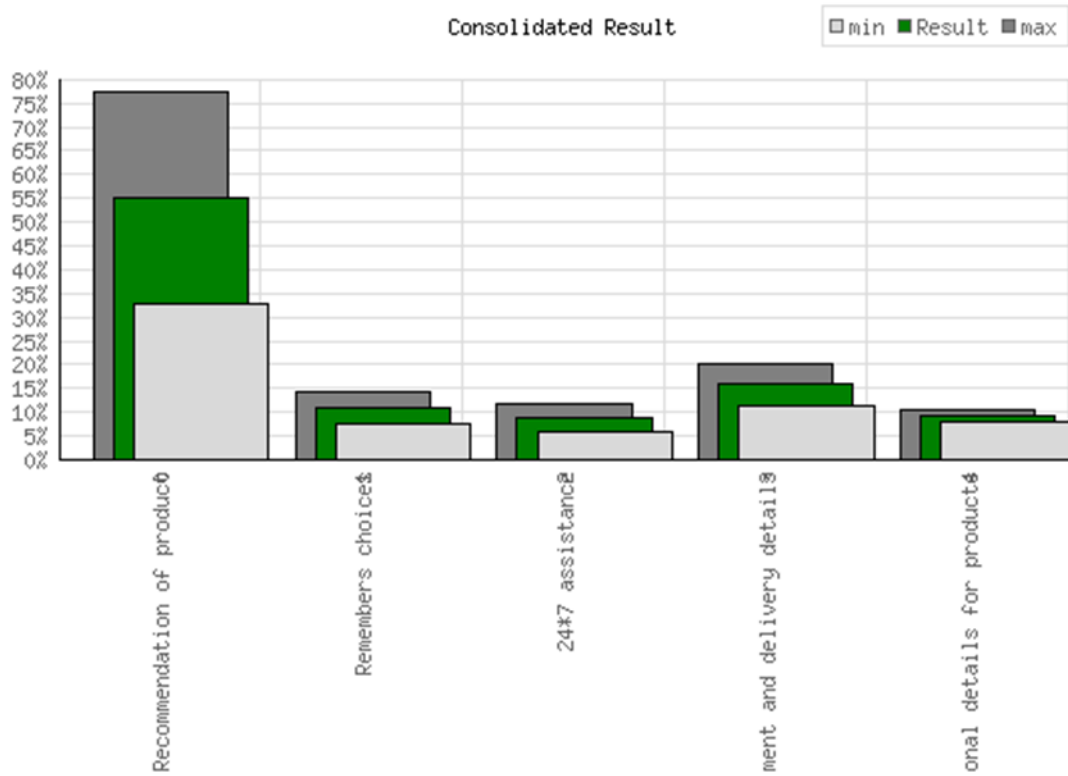


Fig.2.

• Graphical Analysis:

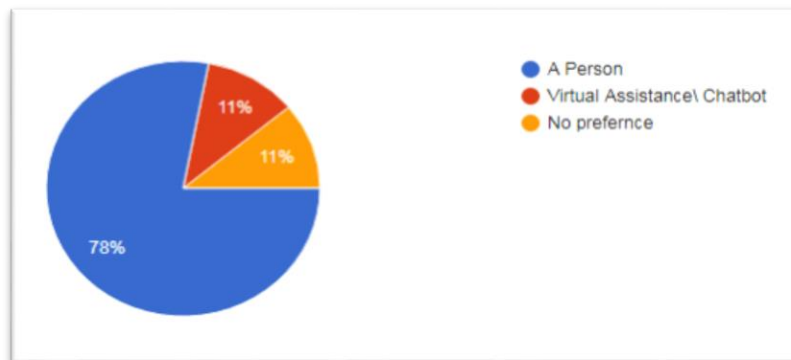


Fig.3

The above figure shows the preference for Human assistance over virtual assistance. But 11% of the customers still do prefer virtual assistance

by artificial intelligence and remaining 11% has no preference.

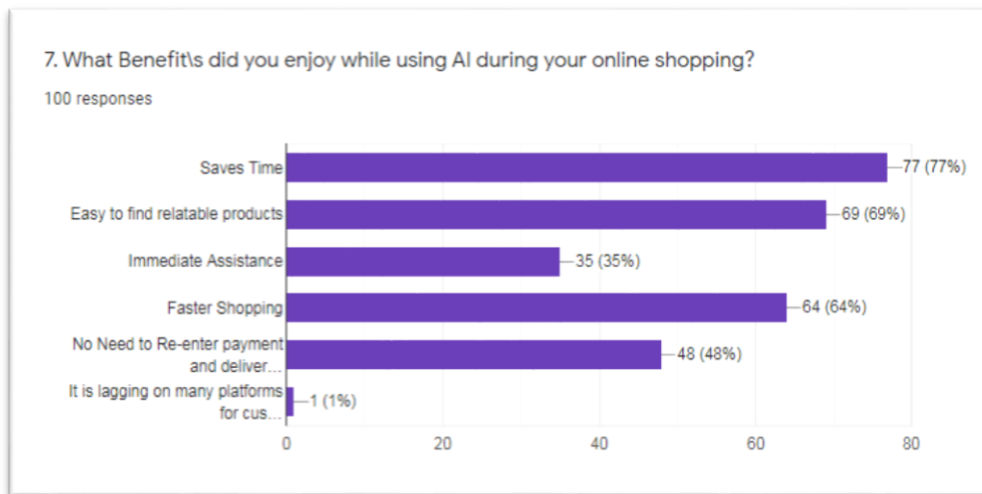


Fig.4

The above graph shows that the most beneficial factor is time saving, that customer enjoy during shopping on an AI based online shopping platform. It is followed facility of easy to find

reliable products and faster shopping which could be possible only due to implication of artificial intelligence.



Fig.5

Fig.6



From the above figures we can observe that 62% of the people still need human assistance even after several benefits of artificial intelligence due to the challenges like Improver replies to queries, Non-relatable search results, usage of private data, etc. It was also observed that customers are not very much comfortable with sharing of their personal data by online platforms by usage of artificial intelligence.

• **One Sample t-test:**

The one sample t-test was done to understand which of the variables included under the

questionnaire, enhance the customer shopping experience on online platforms using artificial intelligence.

The variables which possess significant value less than 0.05 and having mean value of greater than 3.5 considered to impact the results.

From the below table 1 we can interpret that all the factors can impact the online shopping experience of customers.

One-Sample Test for Factors of online shopping platforms

	N	Mean	Std. Deviation	Std. Error Mean
Automatic_Payment_and_delivery_details Automatic Payment and delivery details	100	3.93	.946	.095
Recommendation_of_product Recommendation of product	100	3.75	.869	.087
Remembers_choices Remembers choices	100	3.72	.830	.083
Remembers_Personal_details_for_products Remembers Personal details for products	100	3.89	.852	.085
Anytime_assistance_24*7 Assistance	100	3.51	1.159	.116

Table 1

From the below table 2 we can interpret that,

1. Customers are not comfortable sharing their personal details at online shopping platforms.
2. Customers are dicey regarding the AI replacing humans for customer services.

3. Customers do agree that AI is helpful in enhancing their shopping experiences on online platforms

4. Customers surely agree that AI has a potential to improve customer services in future

One- Sample test for Problems faced by Customers

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Comfort_level_for_sharing_personal_details_14. How comfortable are you sharing your personal details at these platforms?	23.089	99	.000	2.550	2.33	2.77

AI_for_better_customer_service How much do you agree that AI can provide the better or atleast same level of service than a human can to customers?	35.885	99	.000	3.370	3.18	3.56
Shopping_enhancements How much did AI enhance your shopping experience?	53.116	99	.000	3.950	3.80	4.10
potential_of_AI_11. How much do you agree that AI has the potential to improve customer services in future?	44.434	99	.000	4.040	3.86	4.22

Table 2

- Tag Cloud:**
 Tag cloud is tool used for finding and analysing the keywords used by responses in the qualitative study.



Fig.7

From the survey we could draw in some of the important suggestions by customers,

1. The AI technology need to be more defined and accurate regarding the suggestions made and queries to be solved.
2. The process must be fast and user friendly
3. Unnecessary acquiring of customer's personal data is not acceptable by customers, which is stopping them from adapting to the AI technology.
4. There was a mixed suggestion regarding requirement for human assistance and non-requirement for human assistance\ virtual assistance in the customer services.

Hypothesis Testing:

- H₀₁-There is no significant need for human assistance

H₁₁- There is a significant need for human assistance

From the analysis conducted as shown in fig. 3 and fig. 5, it can be said that even though customers are accepting as an advanced tool for customer services they still prefer human assistance to solve their complex queries. AI can compile and present information quickly, but it fails to replace or replicate the human relation with customers. Thus, the null hypothesis H₀₁ is rejected and alternative hypothesis H₁₁ is accepted.

- H₀₂- AI based services has no significant impact on online shopping experience of customers
 H₁₂- AI Based services has a significant impact on online shopping experience of customers

From the data collected and analysed it can be interpreted usage of various AI tools by online shopping platforms has resulted in enhancing the customers' shopping experience. Table 1, One-Sample Test for Factors of online shopping platforms shows an overview of services provided and their positive impact on customer shopping experience. Therefore, null hypothesis H₀₂ is rejected and alternative hypothesis H₁₂ is accepted.

- H₀₃- AI can not provide the better or at least same level of service than a human can to customers
 H₁₃- AI can provide the better or at least same level of service than a human can to customers

In the table 2, it can be observed that with the help of one-sample test the variable has a mean

difference of 3.370 i.e. less than 3.5. This shows that customers had almost a neutral view over this variable. But since it is less than 3.5, here, null hypothesis H_{03} is accepted and alternative hypothesis H_{13} is rejected.

- H_{04} - AI does not enhance customer shopping experience
 H_{14} - AI enhances customer shopping experience

From table 2, it can be interpreted that after conducting one-sample test, the variable has a mean difference of 3.950. This shows that AI proves to be helpful in enhancing customer experience of customers at the time of online shopping. Thus, null hypothesis H_{04} is rejected and alternative hypothesis H_{14} is accepted.

- H_{05} - Customers are not comfortable sharing their personal information on online shopping platforms
 H_{15} - Customers are comfortable sharing their personal information on online shopping platforms

From the survey conducted and data collected from the sample size, it can be understood that customers are not satisfied in sharing their personal information with e-commerce shopping online platforms. A one-sample test was also performed as shown in the table 2, to calculate the mean difference of the variable. It was observed that it had a very low mean difference of 2.550. As the mean difference is less than 3.5, the null hypothesis H_{05} is accepted and alternative hypothesis H_{15} is rejected.

- H_{06} - AI hasn't got the potential to improve customer services in future
 H_{16} - AI has got the potential to improve customer services in future

As seen in the table 2, a one-sample test was conducted on the variable "potential of AI to improve customer services in future". From the test it got a mean difference of 4.040, which is highest as compared to other variables. This shows that AI has got a strong potential to improve customer services in future. Therefore, null hypothesis H_{06} is rejected and alternative hypothesis H_{16} is accepted.

CONCLUSION

The future of artificial intelligence for customer services is bright. Implication of artificial intelligence for customer services is a need by organisations to provide customers with efficient and enhanced services. Without AI, customers servicing teams won't be able to understand their customers' behaviour and needs. It will not only benefit customers but also organisations implementing by saving their costs and time. It is a perfect time to transform the customer service team.

From this study one can observe that customers are welcoming the artificial intelligence services and also see a bright future for it. But due to improper implication and few challenges that customers are facing currently customers will still require human assistance to cover up any defaults made by artificial intelligence. If the service implemented cannot provide the quality of service that is expected, there is still a need for human assistance.

It was also noticed that many of the customer had a fear of leakage and misuse of their private data. This shows that there is a strong need for a systematic law and ethics which can regulate the implication of artificial intelligence by organisations. Organisations need to ensure transparency in compliance and governance to protect trust of the customers and reputation of the organisation. Also, the organisations need to define the responsibility of the error caused by artificial intelligence while serving customers.

Artificial Intelligence is the future of all the operations and services if implemented in the right way. By focusing on changing customer expectations, companies can anticipate how online platforms will continue to shape the customer service and experience and successfully provide enhanced interactions that will help businesses grow. This study was more focused on customer services provided by e-commerce platforms using artificial intelligence. It can further be taken by studying other industries, departments, and stakeholders getting affected due to implication of artificial intelligence.

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